REMARKS

INTRODUCTION

In view of the following, reconsideration of the allowability of all pending claims is respectfully requested.

Claims 22 and 25 have been allowed and claims 2-4, 7-9, 23 and 24 have been indicated as including allowable subject matter, but stand objected for depending from rejected base claims.

REJECTION UNDER 35 USC § 112

Claims 2-4, 7-9, 23 and 24 stand rejected under 35 USC §112, second paragraph, as being indefinite.

Specifically, the Office Action would appear to be objecting to the use of phrases "D0 to D1" and "D0 to an amount D1," and indicates that such phrases render "the degree of light strength signal increase indefinite."

Applicants respectfully disagree.

The use of D0 and D1, as defined in the specification, relate to two different duty cycle levels. For example, D0 can be considered a "first duty cycle" and a D0 could be considered a "second duty cycle." Thus, the specification at least uses the terms generally as two different light power levels, with D0 being the initial level and D1 being a secondary light power level.

Claim 2 makes this distinction clear when reciting: "wherein the light strength signal is increased from D0 to D1," i.e., the light strength is initially now defined to be at D0, and further recites: "such that a first light sensor signal...falls within a linear region of a sensor characteristic curve of the first light sensor," which particularly defines D1, i.e., the light strength signal is now defined to be at D1, which is a light power signal that falls within a linear region of a sensor characteristic curve of the first light sensor.

Although the terms "D0" and "D1" may be broad, the respective use in the claims is clear and definite.

Thus, it is respectfully submitted that the terms "D0" and "D1" are clearly defined and explained in the claims, especially in view of the specification, sufficiently for one skilled in the art to understand the meaning of the same.

Therefore, for at least the above, it is respectfully requested that this rejection be withdrawn.

REJECTION UNDER 35 USC § 102

Claims 1, 5, 6, 10-13 and 18-20 stand rejected under 35 USC §102(e) as being anticipated by Walker et al., U.S. Patent No. 6,561,643. This rejection is respectfully traversed.

By way of review and as an example, independent claim 1 sets forth "[a] media manipulation apparatus, comprising: a media type detector including, a light source to illuminate a media; a specular light sensor, and a first light sensor, wherein the first light sensor has a higher light flux capability compared to the specular light sensor; and a determination unit to determine a media type of the media based on a signal ratio of a detected specular light sensor intensity and a detected first light sensor intensity."

Specifically, independent claim 1 sets forth that the claimed first light sensor has a higher light flux capability compared to the claimed specular light sensor.

The Office Action has indicated that Walker et al. discloses a light source, a first light sensor, and a specular light sensor. The Office Action further points to FIGS. 21 and 29, col. 28, lines 45-67, col. 29, lines 1-45, and col. 36, lines 1-67, as support for the conclusion that Walker et al. discloses the claimed first light sensor having a higher light flux capability compared to the specular light sensor.

Primarily, the Office Action recites: "wherein an aperture, a field stop, accomplishes the higher flux capability and the field stop of the specular light sensor is smaller than the aperture of the first light sensor."

Essentially, the Office Action would appear to be primarily relying on FIG. 21 of Walker et al., which would appear to illustrate equal diameter first focusing elements 165' and 166 which respectively focus light to field stops 522 and 524, which determine how much/what light reaches light sensors 130' and 130. FIG. 21 illustrates field stops 522 and 524 as having differing widths, and with the non-specular light sensor field stop 524 having a wider width. From this illustration, the Office Action would appear to conclude that light sensor 130 has a greater light flux capability.

However, additional illustrations and specification discussions in Walker et al. would appear to provide additional explanation of this illustration in FIG. 21.

For example, FIGS. 22-24 would appear to provide more detailed illustrations of lens unit 110' of FIG. 21. In each illustration, the lens 166 for the non-specular light sensor would appear to have a smaller aperture than lens 160' of the specular light sensor. Thus, at least in view of the more detailed illustrations of FIGS. 22-24, the light flux capability of the specular light sensor would appear to be greater than the non-specular light sensor, i.e., the opposite of the presently claimed invention.

In addition, again it is noted that the Office Action would appear to be relying on the field stop widths illustrated in FIG. 21.

However, FIG. 36 would appear to explain that the illustrated differing widths may actually merely be an illustration of differing orientations of the same window "area". FIG. 36 of Walker et al. illustrates that field stop 522 is orientated such that the longer width is up and down, while field stop 524 is orientated such that the longer width is left and right, i.e., the available light windows for the different field stops would merely appear to be orientated differently, such that such illustrations the other figures are only illustrating the field stop windows from a certain perspective where field stop 524 would "appear" to have a greater light flux capability, while if a different perspective was taken field stop 522 would "appear" to have a greater flux capability.

Based only on the illustration of FIG. 36, it would appear that both field stops have equal area, just different orientations. Thus, both field stops would appear to permit equal light flux capabilities.

Further, in explaining FIG. 36, Walker et al. explaines that "[t]his orientation of the field stop windows 526, 528 allows the diffuse photodiode 130 to collect data which may further distinguish from that collected by the specular photodiode." See Walker et al. in col. 41, lines 61-64. Thus, this different orientation for field stop window 528 would appear to optimize the diffuse light collection or perhaps compensate for the effects of lens 166, while the orientation of field stop window 526 would appear to optimize the specular light collection or perhaps compensate for the effects of lens 165'.

Regardless, FIG. 36 of Walker et al. illustrates that the light flux "capability" of the different field stops would appear to be equal.

In addition, as noted above, FIGS. 22-24 of Walker et al. would actually appear to illustrate that the light flux capability of the non-specular light sensor would be less than the light flux capability of the specular light sensor, since the lens apertures would appear smaller in lens

166 for the non-specular light sensor.

The remaining independent claim also include such light flux capability features.

Thus, for at least the above, it is respectfully submitted that Walker et al. fails to disclose or suggest the presently claimed invention.

Therefore, for at least the above, it is respectfully requested that rejections to claims 1, 5, 6, 10-13 and 18-20 be withdrawn and claims 1, 5, 6, 10-13 and 18-20 be allowed. In addition, it is respectfully submitted that the remaining independent claims that include such light flux capability features are also allowable for at least the same reasoning.

REJECTION UNDER 35 USC § 103

Claim 14 stand rejected under 35 USC § 103 as being obvious over Walker et al., in view of Snail, U.S. Patent No. 4,815,858, and Howarth, U.S. Patent No. 4,319,847. This rejection is respectfully traversed.

It is respectfully submitted that dependent claim 14 is at least allowable for depending from an allowable base claim.

Claims 15 and 17 stand rejected under 35 USC § 103 as being obvious over Walker et al., in view of Howarth and Hashimoto, U.S. Patent No. 5,764,251. This rejection is respectfully traversed.

Similar to above, it is respectfully submitted that Walker et al. fails to at least disclose the claimed: "wherein the first light sensor has a higher light flux capability compared to the specular light sensor." Therefore, the above comments regarding Walker et al. failing to disclose this features are respectfully incorporated herein.

In addition, the Office Action recites: "As for a linear characteristic range of a sensor, Walker is silent. Howarth teaches that for measuring characteristics of a media proper selection of the spectral response of the detector must be accomplished...Hashimoto in a medium discriminating device teaches that a detector's type of linear response is characteristic of a medium....Therefore, it would have been obvious to one skilled in the art [that] the signal's intensity would fall within a linear characteristic range of the light sensor, for media produce differing linear signal responses upon illumination."

However, the referenced disclosure of Howarth discusses color or brightness responses of light reflecting off a sheet, i.e., a spectral response of a radiated sheet, but this disclosure is unrelated to a linear characteristic range of a light sensor.

The present application sets forth detailed explanations of a linear characteristic range of a light sensor, and explains that conventional sensors can sometimes fall into a non-linear characteristic range, which may not be useful for proper media type detection. The discussion in Howarth is not related to such linear characteristic ranges of light sensors.

Similarly, in FIG. 3 of Hashimoto, which the Office Action relies upon, Hashimoto only appears to disclose an output of a light sensor. The illustration of FIG. 3 in Hashimoto would not appear to disclose a sensor characteristic curve or linear and/or non-linear regions of such a curve. Essentially, FIG. 3 is only an output of a light sensor and would not characterize the linear or non-linear aspects of the light sensor. As noted in the specification, light sensors may have linear ranges where their output is directly related to their input and they may have non-linear ranges where the same can not be guaranteed.

Therefore, it is respectfully submitted that Howarth and Hashimoto cannot be used support the obviousness conclusion, or even the underlying motivation, proffered in the Office Action. Withdrawal of this rejection is respectfully requested.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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